



THE CLAIMS

1. A fixation device for securing one end of a graft to bone, said device comprising:

5 ~~N2~~ an implant body having first and second ends, the first end having an opening (configured and adapted to receive an insertion tool) and the second end having a recess; and

 a graft interface member having a graft holding portion and an implant coupling portion, at least a portion of the coupling portion is configured and adapted to be
10 received in the recess to permit the implant body to rotate independently of the graft interface member;

wherein the graft holding portion has a central longitudinal axis and is configured and adapted to hold a graft aligned with the central longitudinal axis.

15 ~~N2~~ 2. The fixation device according to claim 1 wherein the graft holding portion comprises an enclosed loop.

3. The fixation device according to claim 1 wherein the graft holding portion comprises a cage.

20 ~~N4~~ 4. The fixation device according to claim 1 wherein the graft holding portion comprises a helical screw portion.

5. The fixation device according to claim 3 wherein the cage comprises
25 a cage bottom portion and a cage top portion attachable to the cage bottom portion.

~~N6~~ 6. The fixation device according to claim 3 wherein the cage comprises at least one longitudinal wall section and a circular end wall segment.

30 7. The fixation device according to claim 1 wherein the implant coupling portion comprises a flexible post.

8. The fixation device according to claim 7 wherein the flexible post has a flared tip portion.

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9. The fixation device according to claim 8 wherein the flared tip portion is slotted.

10. The fixation device according to claim 1 wherein the recess in the second opposed end of the implant body has an undercut section.

11. The fixation device according to claim 1 wherein implant body and the graft interface member are integrally connected to each other.

12. The fixation device according to claim 5 wherein the cage top portion comprises at least one detent configured and adapted to attach the cage top portion to the cage bottom portion.

13. The fixation device according to claim 12 wherein the cage bottom portion has at least one fitting configured and adapted to receive the detent.

14. The fixation device according to claim 5 wherein the bone cage has at least one wall portion and at least one opening through the at least one wall portion.

15. The fixation device according to claim 14 wherein the at least one wall portion has an interior surface comprising serrations.

16. The fixation device according to claim 6 wherein the at least one longitudinal wall section has at least one opening.

17. The fixation device according to claim 1 wherein the opening in the first opposed end of the implant body is hexagonal.

18. The fixation device according to claim 1 wherein the opening in the first opposed end of the implant body includes an internally threaded portion.

19. The fixation device according to claim 17 wherein the hexagonal opening in the first opposed end of the implant body tapers to an internally threaded portion.

20. The fixation device according to claim 1 wherein the implant body has an outer surface at least a portion of which contains threads for implantation into bone.

21. A graft fixation system for installing and securing a fixation device and a graft attached thereto in a prepared bone tunnel, the system comprising:
a fixation device comprising an implant body having first and second ends, the first end having an opening and the second end having a recess; and a graft interface member having a graft holding portion and an implant coupling portion, at least a portion of the implant coupling portion is configured and adapted to be received in the recess in a manner which permits the implant body to rotate independently of the graft interface member, and the graft holding portion has a central longitudinal axis and is configured and adapted to hold a graft aligned with the central longitudinal axis; and
a driver comprising a shaft and an outer sleeve;
the shaft having a first end that is configured and adapted to engage the implant body; and
the outer sleeve having a first end that is configured and adapted to engage the implant body;
wherein the shaft is configured and adapted to slide within and relative to the outer sleeve through a predetermined distance.

22. The graft fixation system according to claim 21 wherein the first end of the driver shaft threadedly engages the recess in the implant body.

23. The graft fixation system according to claim 21 wherein the first end of the driver outer sleeve is configured to impart a twisting force to the implant body.

24. A method of attaching a graft to bone in a surgical procedure wherein a tunnel is formed in bone, comprising the steps of:
providing a fixation device having a body portion integrally connected to a graft interface portion, wherein the body portion is rotatable with respect to the graft interface portion and wherein the fixation device has a central longitudinal axis;
providing a graft having first and second opposing ends;
attaching the first end of the graft to the graft interface portion of the fixation device along the central longitudinal axis;
attaching the fixation device within the bone tunnel;

affixing the second end of the graft to bone while maintaining tension in the graft; and

adjusting the tension in the graft by turning the body portion in the bone tunnel without imparting substantial twist to the graft.

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